# Major Stormwater Management Plan
# (Major SWMP)
# For
# TPM 21159 – Hefner/Brown

**June 25, 2010**

**Prepared for:**

Michael Hefner
31460 Aqueduct Road
Bonsall, CA 92003
760-218-9171

**Prepared by:**

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The selection, sizing, and preliminary design of stormwater treatment and other control measures in this plan have been prepared under the direction of the following Registered Civil Engineer and meet the requirements of Regional Water Quality Control Board Order R9-2007-0001 and subsequent amendments.

Scott Harry, P.E., P.L.S.

6-25-10
Date

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

| | |
|---|---|
| Project Name: | Hefner Residential Subdivision |
| Project Location: | 31460 Aqueduct Road, Bonsall CA 92003 |
| Permit Number (Land Development Projects): | |
| Work Authorization Number (**CIP only**): | |
| Applicant: | Michael Hefner |
| Applicant's Address: | 31460 Aqueduct Road<br>Bonsall, CA 92003 |
| Plan Prepared By (*Leave blank if same as applicant*): | Scott Harry<br>KARN Engineering & Surveying, Inc. |
| Preparer's Address: | 129 W. Fig Street, Fallbrook CA 92028 |
| Date: | April 23, 2010 |

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

| Project Stages | Does the SWMP need revisions? | | If YES, Provide Revision Date |
|---|---|---|---|
| | YES | NO | |
| | | X | |
| | | | |
| | | | |

Instructions for a Major SWMP can be downloaded at
http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

**STEP 1**

## PRIORITY DEVELOPMENT PROJECT DETERMINATION

### TABLE 1: IS THE PROJECT IN ANY OF THESE CATEGORIES?

| | | | |
|---|---|---|---|
| Yes ☐ | No ☑ | **A** | **Housing subdivisions of 10 or more dwelling units.** Examples: single-family homes, multi-family homes, condominiums, and apartments. |
| Yes ☐ | No ☑ | **B** | **Commercial—greater than one acre.** Any development other than heavy industry or residential. Examples: hospitals; laboratories and other medical facilities; educational institutions; recreational facilities; municipal facilities; commercial nurseries; multi-apartment buildings; car wash facilities; mini-malls and other business complexes; shopping malls; hotels; office buildings; public warehouses; automotive dealerships; airfields; and other light industrial facilities. |
| Yes ☐ | No ☑ | **C** | **Heavy industry—greater than one acre.** Examples: manufacturing plants, food processing plants, metal working facilities, printing plants, and fleet storage areas (bus, truck, etc.). |
| Yes ☐ | No ☑ | **D** | **Automotive repair shops.** A facility categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539. |
| Yes ☐ | No ☑ | **E** | **Restaurants.** Any facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812), where the land area for development is greater than 5,000 square feet. Restaurants where land development is less than 5,000 square feet shall meet all SUSMP requirements except for structural treatment BMP and numeric sizing criteria requirements and hydromodification requirements. |
| Yes ☑ | No ☐ | **F** | **Hillside development greater than 5,000 square feet.** Any development that creates 5,000 square feet of impervious surface and is located in an area with known erosive soil conditions, where the development will grade on any natural slope that is twenty-five percent or greater. |
| Yes ☐ | No ☑ | **G** | **Environmentally Sensitive Areas (ESAs).** All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands. |
| Yes ☐ | No ☑ | **H** | **Parking lots 5,000 square feet or more** or with 15 or more parking spaces and potentially exposed to urban runoff. |
| Yes ☑ | No ☐ | **I** | **Street, roads, highways, and freeways.** Any paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles, and other vehicles. |
| Yes ☐ | No ☑ | **J** | **Retail Gasoline Outlets (RGOs)** that are: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day. |

To use the table, review each definition A through K. If any of the definitions match, the project is a Priority Development Project. Note some thresholds are defined by squarefootage of impervious area created; others by the total area of the development. Please see special requirements for previously developed sites and project exemptions on page 6 of the County SUSMP.

## STEP 2

## PROJECT STORMWATER QUALITY DETERMINATION

Total Project Site Area 58 (Acres or $ft^2$)

Estimated amount of disturbed acreage: 8.8 (Acres or $ft^2$)
(If >1 acre, you must also provide a WDID number from the SWRCB) WDID: N/A, TPM

This project will not be going to construction for several years and therefore will not be filing an NOI or obtaining a WDID number until construction documents are prepared.

Complete A through C and the calculations below to determine the amount of impervious surface on your project before and after construction.

A. Total size of project site: 58 (Acres or $ft^2$)

B. Total impervious area (including roof tops) before construction 0.23 (Acres or $ft^2$)

C. Total impervious area (including roof tops) after construction 1.84 (Acres or $ft^2$)

Calculate percent impervious before construction: B/A = 0.4 %
Calculate percent impervious after construction: C/A = 3.2 %

Please provide detailed descriptions regarding the following questions:

**TABLE 2: PROJECT SPECIFIC STORMWATER ANALYSIS**

| | |
|---|---|
| 1. | Please provide a brief description of the project. |
| The project is a proposed minor subdivision located at 31460 Aqueduct Road in Bonsall, CA an unincorporated area of the County of San Diego near the intersection of Interstate 15 and Camino Del Rey. The proposal includes subdivision of an approximately 58 acre parcel into four new parcels and a remainder parcel. A clustering concept was utilized in order to minimize impacts to biologically sensitive habitat. | |
| 2. | Describe the current and proposed zoning and land use designation. |
| Current zoning is A70, (18) Multiple Rural Use. Proposed general plan designation within the County's General Plan update is Semi-Rural 10 (SR-10). | |
| 3. | Describe the pre-project and post-project topography of the project. (Show on Plan) |
| The existing topography is mostly steep hillsides. The project proposes to utilize flat areas for house location to the extent possible. "Street B" will be constructed utilizing the existing topography. | |
| 4. | Describe the soil classification, permeability, erodibility, and depth to groundwater for LID and Treatment BMP consideration. (Show on Plan) If infiltration BMPs are proposed, a Geotechnical Engineer must certify infiltration BMPs in Attachment E. |
| The project is composed of type B and C soils. In the areas that the site was tested the ground water was at least 15 feet deep. | |
| 5. | Describe if contaminated or hazardous soils are within the project area. (Show on Plan) |
| N/A | |
| 6. | Describe the existing site drainage and natural hydrologic features. (Show on Plan). |
| The site is bisected by Aqueduct Road which is constructed along a natural ridgeline, therefore, the drainage areas west of Aqueduct Road flow in a westerly direction and the drainage areas east of Aqueduct Road flow in a southeasterly direction. | |
| 7. | Describe site features and conditions that constrain, or provide opportunities for stormwater control, such as LID features. |
| The site is constrained by steep slopes. Vegetated swales are proposed at flat areas where runoff naturally concentrates. | |
| 8. | Is this project within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects?* |
| Yes | ~~No~~ |
| 9. | Is this an emergency project? |
| Yes | ~~No~~ |

## CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

## CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

**TABLE 3: PROJECT SPECIFIC STORMWATER ANALYSIS**

| No. | CRITERIA | YES | NO | N/A | COMMENTS |
|---|---|---|---|---|---|
| 1. | Will the project include work in channels? | | ✓ | | If YES go to 2<br>If NO go to 13. |
| 2. | Will the project increase velocity or volume of downstream flow? | | | | If YES go to 6. |
| 3. | Will the project discharge to unlined channels? | | | | If YES go to. 6. |
| 4. | Will the project increase potential sediment load of downstream flow? | | | | If YES go to 6. |
| 5. | Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability? | | | | If YES go to 8. |
| 6. | Review channel lining materials and design for stream bank erosion. | | | | Continue to 7. |
| 7. | Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity. | | | | Continue to 8. |
| 8. | Include, where appropriate, energy dissipation devices at culverts. | | | | Continue to 9. |
| 9. | Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour. | | | | Continue to 10. |
| 10. | Include, if appropriate, detention facilities to reduce peak discharges. | | | | Continue to 11. |
| 11. | "Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development. | | | | Continue to 12. |
| 12. | Provide other design principles that are comparable and equally effective. | | | | Continue to 13. |
| 13. | End | | | | |

**TEMPORARY CONSTRUCTION BMPS**

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- ☑ Silt Fence
- ☑ Fiber Rolls
- ☑ Street Sweeping and Vacuuming
- ☐ Storm Drain Inlet Protection
- ☑ Stockpile Management
- ☑ Solid Waste Management
- ☑ Stabilized Construction Entrance/Exit
- ☐ Dewatering Operations
- ☐ Vehicle and Equipment Maintenance
- ☐ Desilting Basin
- ☑ Gravel Bag Berm
- ☑ Sandbag Barrier
- ☑ Material Delivery and Storage
- ☑ Spill Prevention and Control
- ☑ Concrete Waste Management
- ☑ Water Conservation Practices
- ☑ Paving and Grinding Operations

☑ Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

## EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices during the construction phase.

### TABLE 4: EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

| No. | CRITERIA | YES | NO | INFORMATION |
|---|---|---|---|---|
| 1. | Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmdls.pdf | | ✓ | If YES, continue to 2.<br>If NO, go to 5. |
| 2. | Will the project disturb more than 5 acres, including all phases of the development? | | | If YES, continue to 3.<br>If NO, go to 5. |
| 3. | Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity? | | | If YES, continue to 4.<br>If NO, go to 5. |
| 4. | Will the project disturb soils with a predominance of USDA-NRCS Erosion factors $k_f$ greater than or equal to 0.4? | | | If YES, continue to 6.<br>If NO, go to 5. |
| 5. | Project is not required to use Advanced Treatment BMPs. | ✓ | | Document for Project Files by referencing this checklist. |
| 6. | Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs. | | ✓ | Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria |

**Exemption potentially available for projects that require advanced treatment:** Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that shows to the County official's satisfaction that advanced treatment is not required

## STEP 3

## HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

### TABLE 5: HYDROMODIFICATION DETERMINATION

| | QUESTIONS | YES | NO | Information |
|---|---|---|---|---|
| 1. | Will the proposed project disturb 50 or more acres of land? (Including all phases of development) | | ✓ | If YES, continue to 2. If NO, go to 6. |
| 2. | Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with rip-rap, sackcrete, etc, downstream to their outfall into bays or the ocean? | | | If NO, continue to 3. If YES, go to 6. |
| 3. | Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean? | | | If NO, continue to 4. If YES, go to 6. |
| 4. | Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater? | | | If NO, continue to 5. If YES, go to 6. |
| 5. | Project is required to manage hydromodification impacts. | | | Hydromodification Management Required as described in Section 67.812 b(4) of the WPO. |
| 6. | Project is not required to manage hydromodification impacts. | ✓ | | Hydromodification Exempt. Keep on file. |

**An exemption is potentially available for projects that are required (No. 5. in Table 5 above) to manage hydromodification impacts:** The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

## STEP 4

## POLLUTANTS OF CONCERN DETERMINATION

### WATERSHED

Please check the watershed(s) for the project.

| | | | |
|---|---|---|---|
| ☐ San Juan 901 | ☐ Santa Margarita 902 | ☑ San Luis Rey 903 | ☐ Carlsbad 904 |
| ☐ San Dieguito 905 | ☐ Penasquitos 906 | ☐ San Diego 907 | ☐ Sweetwater 909 |
| ☐ Otay 910 | ☐ Tijuana 911 | ☐ Whitewater 719 | ☐ Clark 720 |
| ☐ West Salton 721 | ☐ Anza Borrego 722 | ☐ Imperial 723 | |

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

### HYDROLOGIC SUB-AREA NAME AND NUMBER(S)

| Number | Name |
|---|---|
| 903.12 | Bonsall Hydrologic Subarea |
| | |

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

**SURFACE WATERS** that each project discharge point proposes to discharge to. List the impairments identified in Table 7.

| SURFACE WATERS (river, creek, stream, etc.) | Hydrologic Unit Basin Number | Impairment(s) listed [303(d) listed waters or waters with established TMDLs ] | Distance to Project |
|---|---|---|---|
| **Inland Surface Waters** | 903.12 | | |
| | | | |
| | | | |

http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/r9_06_303d_reqtmdls.pdf

### GROUND WATERS

| Ground Waters | Hydrologic Unit Basin Number | MUN | AGR | IND | PROC | GWR | FRESH | POW | REC1 | REC2 | BIOL | WARM | COLD | WILD | RARE | SPWN |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Inland Surface Waters** | 903.12 | | ● | ● | | | | | ● | ● | ● | ● | | ● | ● | |
| | | | | | | | | | | | | | | | | |
| Ground Waters | 903.12 | ● | ● | ● | | | | | | | | | | | | |

http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

+ Excepted from Municipal ● Existing Beneficial Use ○ Potential Beneficial Use

PROJECT ANTICIPATED AND POTENTIAL POLLUTANTS

Using Table 6, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

**TABLE 6: ANTICIPATED AND POTENTIAL POLLUTANTS GENERATED BY LAND USE TYPE**

| | *General Pollutant Categories* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ***PDP Categories*** | Sediments | Nutrients | Heavy Metals | Organic Compounds | Trash & Debris | Oxygen Demanding Substances | Oil & Grease | Bacteria & Viruses | Pesticides |
| **Detached Residential Development** | X | X | | | X | X | X | X | X |
| Attached Residential Development | X | X | | | X | P(1) | P(2) | P | X |
| Commercial Development 1 acre or greater | P(1) | P(1) | | P(2) | X | P(5) | X | P(3) | P(5) |
| Heavy industry /industrial development | X | | X | X | X | X | X | | |
| Automotive Repair Shops | | | X | X(4)(5) | X | | X | | |
| Restaurants | | | | | X | X | X | X | |
| **Hillside Development >5,000 ft²** | X | X | | | X | X | X | | X |
| Parking Lots | P(1) | P(1) | X | | X | P(1) | X | | P(1) |
| Retail Gasoline Outlets | | | X | X | X | X | X | | |
| **Streets, Highways & Freeways** | X | P(1) | X | X(4) | X | P(5) | X | | |

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

PROJECT POLLUTANTS OF CONCERN SUMMARY TABLE

Please summarize the identified project pollutant of concern by checking the appropriate boxes in the table below and list any surface water impairments identified. Pollutants anticipated to be generated by the project, which are also causing impairment of receiving waters, shall be considered the primary pollutants of concern. For projects where no primary pollutants of concern exist, those pollutants identified as anticipated shall be considered secondary pollutants of concern.

**TABLE 7: PROJECT POLLUTANTS OF CONCERN**

| Pollutant Category | Anticipated (X) | Potential (P) | Surface Water Impairments |
|---|---|---|---|
| Sediments | X | | |
| Nutrients | X | | |
| Heavy Metals | | | |
| Organic Compounds | X | | |
| Trash & Debris | X | | |
| Oxygen Demanding Substances | X | | |
| Oil & Grease | X | | |
| Bacteria & Viruses | X | | |
| Pesticides | X | | |

## STEP 5

## LID AND SITE DESIGN STRATEGIES

Each numbered item below is a Low Impact Development (LID) requirement of the WPO. Please check the box(s) under each number that best describes the LID BMP(s) and Site Design Strategies selected for this project.

### TABLE 8: LID AND SITE DESIGN

| |
|---|
| 1. Conserve natural Areas, Soils, and Vegetation |
| ☐ Preserve well draining soils (Type A or B) |
| ☐ Preserve Significant Trees |
| ☐ Preserve critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions |
| ☑ Other. Description: All natural areas have been conserved to the extent possible. |
| 2. Minimize Disturbance to Natural Drainages |
| ☐ Set-back development envelope from drainages |
| ☐ Restrict heavy construction equipment access to planned green/open space areas |
| ☑ Other. Description: Natural drainages have been conserved to the extent possible. |
| 3. Minimize and Disconnect Impervious Surfaces (see 5) |
| ☑ Clustered Lot Design |
| ☐ Items checked in 5? |
| ☐ Other. Description: |
| 4. Minimize Soil Compaction |
| ☑ Restrict heavy construction equipment access to planned green/open space areas |
| ☑ Re-till soils compacted by construction vehicles/equipment |
| ☑ Collect & re-use upper soil layers of development site containing organic Materials |
| ☐ Other. Description: |
| 5. Drain Runoff from Impervious Surfaces to Pervious Areas |
| LID Street & Road Design |
| ☐ Curb-cuts to landscaping |
| ☑ Rural Swales |
| ☐ Concave Median |
| ☐ Cul-de-sac Landscaping Design |
| ☐ Other. Description: |
| LID Parking Lot Design |
| ☐ Permeable Pavements |

| |
|---|
| ☐ Curb-cuts to landscaping |
| ☐ Other. Description: |
| LID Driveway, Sidewalk, Bike-path Design |
| ☐ Permeable Pavements |
| ☐ Pitch pavements toward landscaping |
| ☐ Other. Description: |
| LID Building Design |
| ☐ Cisterns & Rain Barrels |
| ☑ Downspout to swale |
| ☐ Vegetated Roofs |
| ☐ Other. Description: |
| LID Landscaping Design |
| ☐ Soil Amendments |
| ☑ Reuse of Native Soils |
| ☑ Smart Irrigation Systems |
| ☐ Street Trees |
| ☐ Other. Description: |
| 6. Minimize erosion from slopes |
| ☑ Disturb existing slopes only when necessary |
| ☑ Minimize cut and fill areas to reduce slope lengths |
| ☑ Incorporate retaining walls to reduce steepness of slopes or to shorten slopes |
| ☑ Provide benches or terraces on high cut and fill slopes to reduce concentration of flows |
| ☑ Rounding and shaping slopes to reduce concentrated flow |
| ☑ Collect concentrated flows in stabilized drains and channels |
| ☐ Other. Description: |

## STEP 6

## SOURCE CONTROL

Please complete the checklist on the following pages to determine Source Control BMPs. Below is instruction on how to use the checklist. (Also see instructions on page 40 of the *SUSMP)*

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.

2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your Source Control Exhibit in Attachment B.

3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in a table in your Project-Specific SUSMP.

Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternatives.

| |
|---|
| Vegetated swales are proposed for this project. The vegetated swales have been located on the residential parcels and along Aqueduct Road and "Street B". |

Use the format in Table 9 below to summarize the project Source Control BMPs. Incorporate all identified Source Control BMPs in your Source Control Exhibit in Attachment B.

**TABLE 9: PROJECT SOURCE CONTROL BMPS**

| *Potential source of runoff pollutants* | *Permanent source control BMPs* | *Operational source control BMPs* |
|---|---|---|
| Landscaping/Outdoor Pestisides | Vegetated Swales | Maintain landscaping utilizing min. or no pestisides. |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| 1<br>**Potential Sources of Runoff Pollutants** | 2<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | 3<br>**Permanent Controls—List in SUSMP Table and Narrative** | 4<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ❑ **A.** On-site storm drain inlets | ❑ Locations of inlets. | ❑ Mark all inlets with the words "No Dumping! Flows to Bay" or similar. | ❑ Maintain and periodically repaint or replace inlet markings.<br>❑ Provide stormwater pollution prevention information to new site owners, lessees, or operators.<br>❑ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com<br>❑ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains." |
| ❑ **B.** Interior floor drains and elevator shaft sump pumps | | ❑ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer. | ❑ Inspect and maintain drains to prevent blockages and overflow. |
| ❑ **C.** Interior parking garages | | ❑ State that parking garage floor drains will be plumbed to the sanitary sewer. | ❑ Inspect and maintain drains to prevent blockages and overflow. |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| 1<br>**Potential Sources of Runoff Pollutants** | 2<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | 3<br>**Permanent Controls—List in SUSMP Table and Narrative** | 4<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ☐ **D1.** Need for future indoor & structural pest control | | ☐ Note building design features that discourage entry of pests. | ☐ Provide Integrated Pest Management information to owners, lessees, and operators. |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| **1**<br>**Potential Sources of Runoff Pollutants** | **2**<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | **3**<br>**Permanent Controls—List in SUSMP Table and Narrative** | **4**<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ☑ **D2.** Landscape/ Outdoor Pesticide Use<br><br>Note: Should be consistent with project landscape plan (if applicable). | ☐ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.<br><br>☐ Show self-retaining landscape areas, if any.<br><br>☑ Show stormwater treatment facilities. | State that final landscape plans will accomplish all of the following:<br><br>☑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.<br><br>☑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.<br><br>☐ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.<br><br>☑ Consider using pest-resistant plants, especially adjacent to hardscape.<br><br>☑ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions. | ☑ Maintain landscaping using minimum or no pesticides.<br><br>☐ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com<br><br>☐ Provide IPM information to new owners, lessees and operators. |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| 1<br>**Potential Sources of Runoff Pollutants** | 2<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | 3<br>**Permanent Controls—List in SUSMP Table and Narrative** | 4<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ❑ **E.** Pools, spas, ponds, decorative fountains, and other water features. | ❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. | ❑ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements. | ❑ See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |
| ❑ **F.** Food service | ❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.<br><br>❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer. | ❑ Describe the location and features of the designated cleaning area.<br><br>❑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated. | ❑ |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| 1<br>**Potential Sources of Runoff Pollutants** | 2<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | 3<br>**Permanent Controls—List in SUSMP Table and Narrative** | 4<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ❑ **G.** Refuse areas | ❑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.<br><br>❑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.<br><br>❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer. | ❑ State how site refuse will be handled and provide supporting detail to what is shown on plans.<br><br>❑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar. | ❑ State how the following will be implemented:<br><br>Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |
| ❑ **H.** Industrial processes. | ❑ Show process area. | ❑ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system." | ❑ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

| IF THESE SOURCES WILL BE ON THE PROJECT SITE ... | ... THEN YOUR STORMWATER CONTROL PLAN SHOULD INCLUDE THESE SOURCE CONTROL BMPs | | |
|---|---|---|---|
| **1**<br>**Potential Sources of Runoff Pollutants** | **2**<br>**Permanent Controls—Show on Source Control Exhibit, Attachment B** | **3**<br>**Permanent Controls—List in SUSMP Table and Narrative** | **4**<br>**Operational BMPs—Include in SUSMP Table and Narrative** |
| ❑ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.) | ❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.<br><br>❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.<br><br>❑ Storage of hazardous materials and wastes must be in compliance with the local bazardous materials ordinance and a Hazardous Materials Management Plan for the site. | ❑ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.<br><br>Where appropriate, reference documentation of compliance with the requirements of local Hazardous Materials Programs for:<br><br>▪ Hazardous Waste Generation<br><br>▪ Hazardous Materials Release Response and Inventory<br><br>▪ California Accidental Release (CalARP)<br><br>▪ Aboveground Storage Tank<br><br>▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991<br><br>▪ Underground Storage Tank | ❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

| | | | |
|---|---|---|---|
| ❑ **J. Vehicle and Equipment Cleaning** | ❑ Show on drawings as appropriate:<br><br>(1) Commercial/industrial facilities having vehicle /equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose hibs and installing signs prohibiting such uses.<br><br>(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).<br><br>(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.<br><br>(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed. | ❑ If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced. | Describe operational measures to implement the following (if applicable):<br><br>❑ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.<br><br>❑ Car dealerships and similar may rinse cars with water only.<br><br>❑ See Fact Sheet SC-21, "Vehicle and Equipment Cleaning," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

| | | | |
|---|---|---|---|
| ❑ **K.** Vehicle/Equipment Repair and Maintenance | ❑ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.<br><br>❑ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.<br><br>❑ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained. | ❑ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.<br><br>❑ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.<br><br>❑ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. | In the SUSMP report, note that all of the following restrictions apply to use the site:<br><br>❑ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.<br><br>❑ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids sball be contained or drained from the vehicle immediately.<br><br>❑ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. |

| | | | |
|---|---|---|---|
| ❑ **L. Fuel Dispensing Areas** | ❑ Fueling areas[1] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.<br><br>❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area. | | ❑ The property owner shall dry sweep the fueling area routinely.<br><br>❑ See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

[1] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

| | | | |
|---|---|---|---|
| ❑ **M.** Loading Docks | ❑ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas should be drained to the sanitary sewer where feasible. Direct connections to storm drains from depressed loading docks are prohibited.<br><br>Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which<br>❑ shall be kept closed during periods of operation.<br><br>Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.<br>❑ | | ❑ Move loaded and unloaded items indoors as soon as possible.<br><br>❑ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |
| ❑ **N.** Fire Sprinkler Test Water | | ❑ Provide a means to drain fire sprinkler test water to the sanitary sewer. | ❑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com |

| | | | |
|---|---|---|---|
| **O.** Miscellaneous Drain or Wash Water<br>❑ Boiler drain lines<br>❑ Condensate drain lines<br>❑ Rooftop equipment<br>❑ Drainage sumps<br>❑ Roofing, gutters, and trim. | | ❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.<br>❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.<br>❑ Rooftop mounted equipment with potential to produce pollutants shall be roofed and/or have secondary containment.<br>❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.<br>❑ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. | |
| ❑ **P.** Plazas, sidewalks, and parking lots. | | | ❑ Plazas, sidewalks, and parking lots shall be swept regularly to prevent the accumulation of litter and debris. Debris from pressure washing shall be collected to prevent entry into the storm drain system. Washwater containing any cleaning agent or degreaser shall be collected and discharged to the sanitary sewer and not discharged to a storm drain. |

**STEP 7**

## LID AND TREATMENT CONTROL SELECTION

A treatment control BMP and/or LID facility must be selected to treat the project pollutants of concern identified in Table 7 "Project Pollutants of Concern". A treatment control facility with a high or medium pollutant removal efficiency for the project's most significant pollutant of concern shall be selected. It is recommended to use the design procedure in Chapter 4 of the SUSMP to meet NPDES permit LID requirements, treatment requirements, and flow control requirements. If your project does not utilize this approach, the project will need to demonstrate compliance with LID, treatment and flow control requirements. Review Chapter 2 "Selection of Stormwater Treatment Facilities" in the SUSMP to assist in determining the appropriate treatment facility for your project.

| Will this project be utilizing the unified LID design procedure as described in Chapter 4 of the Local SUSMP? *(If yes, please document in Attachment D following the steps in Chapter 4 of the County SUSMP)* | |
|---|---|
| Yes | No |
| If this project is not utilizing the unified LID design procedure, please describe how the alternative treatment facilities will comply with applicable LID criteria, stormwater treatment criteria, and hydromodification management criteria. | |
| Vegetated swales have been chosen as the LID facilities for this project. The vegetated swales have been designed per the requirements in Chapter 4 of the SUSMP and therefore are eligible for LID credit. Vegetated swales provide adequate stormwater treatment for the proposed uses and identified Pollutants of Concern. Given the 10 minute residence time requirement for vegetated swales and the percolation rates of the on-site soils, the vegetated swales will reduce runoff sufficient to meet the hydromodification management criteria. | |

- Indicate the project pollutants of concern (POCs) from Table 7 in Column 2 below.

**TABLE 10: GROUPING OF POTENTIAL POLLUTANTS of Concern (POCs) by fate during stormwater treatment**

| Pollutant | Check Project Specific POCs | Coarse Sediment and Trash | Pollutants that tend to associate with fine particles during treatment | Pollutants that tend to be dissolved following treatment |
|---|---|---|---|---|
| Sediment | X | X | X | |
| Nutrients | X | | X | X |
| Heavy Metals | | | X | |
| Organic Compounds | X | | X | |
| Trash & Debris | X | X | | |
| Oxygen Demanding | X | | X | |
| Bacteria | X | | X | |
| Oil & Grease | X | | X | |
| Pesticides | X | | X | |

➢ Indicate the treatment facility(s) chosen for this project in the following table.

**TABLE 11: GROUPS OF POLLUTANTS and relative effectiveness of treatment facilities**

| Pollutants of Concern | Bioretention Facilities (LID) | Settling Basins (Dry Ponds) | Wet Ponds and Constructed Wetlands | Infiltration Facilities or Practices (LID) | Media Filters | Higher-rate biofilters* | Higher-rate media filters* | Trash Racks & Hydro-dynamic Devices | Vegetated Swales |
|---|---|---|---|---|---|---|---|---|---|
| **Coarse Sediment and Trash** | High | High | High | High | High | High | High | High | High |
| **Pollutants that tend to associate with fine particles during treatment** | High | High | High | High | High | Medium | Medium | Low | Medium |
| **Pollutants that tend to be dissolved following treatment** | Medium | Low | Medium | High | Low | Low | Low | Low | Low |

➢ Please check the box(s) that best describes the Treatment BMP(s) and/or LID BMP selected for this project.

**TABLE 12: PROJECT LID AND TC-BMPS**

| |
|---|
| **Bioretention Facilites (LID)** |
| ☐ Bioretention area |
| ☐ Flow-through Planter |
| ☐ Cistern with Bioretention Facility |
| **Settling Basins (Dry Ponds)** |
| ☐ Extended/dry detention basin with grass/vegetated lining |
| ☐ Extended/dry detention basin with impervious lining |
| **Infiltration Facilities or Practices (LID)** |
| ☐ Infiltration basin |
| ☐ Dry well |
| ☐ Infiltration trench |
| **Wet Ponds and Constructed Wetlands** |
| ☐ Wet pond/basin (permanent pool) |
| ☐ Constructed wetland |
| **Vegetated Swales (LID[1])** |
| ☑ Vegetated Swale |
| **Media Filters** |

| |
|---|
| ☐ Austin Sand Filter |
| ☐ Delaware Sand Filter |
| ☐ Multi-Chambered Treatment Train (MCTT) |
| **Higher-rate Biofilters** |
| ☐ Tree-pit-style unit |
| ☐ Other_____ |
| **Higher-rate Media Filters** |
| ☐ Vault-based filtration unit with replaceable cartridges |
| ☐ Other_____ |
| **Hydrodynamic Separator Systems** |
| ☐ Swirl Concentrator |
| ☐ Cyclone Separator |
| **Trash Racks** |
| ☐ Catch Basin Insert |
| ☐ Catch Basin Insert w/ Hydrocarbon boom |
| ☐ Other_____ |
| **Self-Treating or Self-Retaining Areas (LID)** |
| ☐ Pervious Pavements |
| ☐ Vegetated Roofs |
| ☐ Other_____ |

[1] Must be designed per SUSMP "Vegetated Swales" design criteria for LID credit (p. 65).

For design guidelines and calculations refer to Chapter 4 "Low Impact Development Design Guide" in the SUSMP. Please show all calculations and design sheets for all treatment facilities proposed in Attachment D.

➢ Create a Construction Plan SWMP Checklist for your project.

Instructions on how to fill out table

1. Number and list each measure or BMP you have specified in your SWMP in Columns 1 and Maintenance Category in Column 3 of the table. Leave Column 2 blank.

2. When you submit construction plans, duplicate the table (by photocopy or electronically). Now fill in Column 2, identifying the plan sheets where the BMPs are shown. List all plan sheets on which the BMP appears. This table must be shown on the front sheet of the grading and improvement plans.

| Stormwater Treatment Control and LID BMP's | | | |
|---|---|---|---|
| Description / Type | Sheet | Maintenance Category | Revisions |
| Vegetated Swale | TBD | First | |
| | | | |
| | | | |
| | | | |
| | | | |

* BMP's approved as part of Stormwater Management Plan (SWMP) dated xx/xx/xx on file with DPW. Any changes to the above BMP's will require SWMP revision and Plan Change approvals.

➢ Please describe why the chosen treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a feasibility analysis that demonstrates utilization of a treatment facility with a high or medium removal efficiency ranking is infeasible.

Vegetated swales provide high treatment value for the "Coarse Sediment and Trash", medium treatment value for the "Pollutants that tend to associate with fine particles during treatment", and low treatment value for the "Pollutants that tend to be dissolved following treatment". For the majority of the identified Pollutants of Concern, the vegetated swales provide medium and high treatment value. "Nutrients" are the only Pollutant of Concern identified where vegetated swales provide "low" treatment value. Given the rural residential setting of the project, vegetated swales give adequate treatment value while minimizing impacts to soils and vegetation.

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality treatment volume or flow values for the selected project Treatment BMP(s). Guidelines for design calculations are located in Chapter 4 of the County SUSMP. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow ($Q_{WQ}$) and the Water Quality storage volume ($V_{WQ}$) is dependent on the type of treatment BMP selected for the project.

| **Outfall** | **Tributary Area (acres)** | **$Q_{WQ}$ (cfs)** | **$V_{WQ}$ ($ft^3$)** |
|---|---|---|---|
| Area A2 | 9.1 | 5.8 | |
| Area B | 4.7 | 3.0 | |
| Area C1 | 0.8 | 0.5 | |
| Area C2 | 1.4 | 0.9 | |
| Area D_House | 0.1 | 0.1 | |
| Area D_Road | 1.5 | 1.0 | |

## STEP 8

## OPERATION AND MAINTENANCE

- Please check the box that best describes the maintenance mechanism(s) for this project.

**TABLE 13: PROJECT BMP CATEGORY**

| CATEGORY | SELECTED | | BMP Description |
|---|---|---|---|
| | YES | NO | |
| First | X | | Vegetated Swale |
| Second[1] | | | |
| Third[2] | | | |
| Fourth | | | |

Note:

1. A recorded maintenance agreement will be required.
2. Project will be required to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

- Please list all individual LID and Treatment Control BMPs (TC-BMPs) incorporated into project. Please ensure the "BMP Identifier" is consistent with the legend in Attachment C "LID and/or TC-BMP Exhibit". Please attach the record plan sheets upon completion of project and amend the Major SWMP where appropriate. For each type of LID or TC-BMP provide an inspection sheet in Attachment F "Maintenance Plan".

**TABLE 14: PROJECT SPECIFIC LID AND TC-BMPS**

| BMP Identifier* | LID or TC-BMP Type | BMP Pollutant of Concern Efficiency (H,M,L) – Table 11 | Final Construction Date *(to be completed by County inspector)* | Final Construction Inspector Name *(to be completed by County inspector)* |
|---|---|---|---|---|
| IMP | Vegetated Swale | H, M, & L | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

* For location of BMP's, see approved Record Plan dated _XX/XX/XX_, plan (TYPE) sheet _(#)_.

➢ Responsible Party for Long-term Maintenance:

Identify the parties responsible for long-term maintenance of the BMPs identified above and Source Controls specified in Attachment B. Include the appropriate written agreement with the entities responsible for O&M in Attachment F. Please see Chapter 5 "Private Ownership and Maintenance" on page 94 of the County SUSMP for appropriate maintenance mechanisms.

**N/A. The project is in the Tentative Parcel Map phase. Responsible parties will be identified during the construction phase.**

| |
|---|
| Name: |
| Company Name: |
| Phone Number: |
| Street Address: |
| City/State/Zip: |
| Email Address: |

➢ Funding Source:

Provide the funding source or sources for long-term operation and maintenance of each BMP identified above. By certifying the Major SWMP the applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners.

| |
|---|
| N/A – First Category |

## ATTACHMENTS

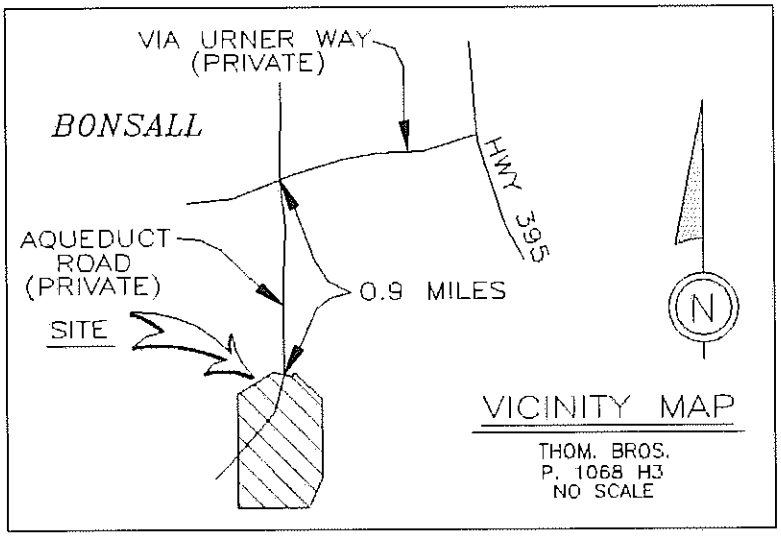
Please include the following attachments.

| ATTACHMENT | | COMPLETED | N/A |
|---|---|---|---|
| A | Project Location Map | X | |
| B | Source Control Exhibit | X | |
| C | LID and/or TC-BMP Exhibit | X | |
| D | Drainage Management Area (DMA) Maps, Sizing Design Calculations and BMP/IMP Design Details | X | |
| E | Geotechnical Certification Sheet | | |
| F | Maintenance Plan | X | |
| G | Tracking Report | | |
| H | Addendum | | |

**Note:** Attachments B and C may be combined.

# ATTACHMENT A

## Project Location Map



# ATTACHMENT B & C

## Source Control Exhibit &
## LID Exhibit

# ATTACHMENT D

## Drainage Management Area (DMA) Maps, Sizing Design Calculations and TC-BMP/LID Design Details

**BMP DATA SHEET**
RATIONAL METHOD CALCULATIONS
FOR STORM WATER QUALITY VOLUMES Qwq
TPM 21159

Vegetated swales have been selected as the treatment BMP for this project. The vegetated swales have been placed in areas where velocities will be low and runoff from new impervious surfaces will flow directly to the vegetated swales for treament. The swales were designed per CASQA design standards.

I = 0.2 inches/hr was utilized for the following calculations

## AREA A2

$Q_{85\%}$, I= 0.76

**AREA A2**

| | | | | |
|---|---|---|---|---|
| | | Area = | 9.1 | acres |
| T = | 0.1 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 4.5 min | L = | 1885 feet | 0.36 Miles |
| $T_i$ = | 5.0 min | Hp= | 780 | |
| $T_c$ = | 9.5 min | Lp= | 324 | |
| | | ΔE = | 456 | |
| | | Slope = | 24.19% | |
| I = | 1.3 in/hr | $I=(7.44*0.76(Tc^{-0.645})$ | | |
| | **0.2 in/hr** | | | |
| Q = CIA | | | | |
| $Q_{WQ}$ = | **0.6 cfs** | | | |

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 2 |
| Slope = | 0.02% | S = | 0.02% | d= | 1.3 |
| z= | 3.00 | A = | 7.67 | wp= | 7.8 |
| | | R = | 0.98 | a= | 7.67 |
| | | n = | 0.25 | R= | 0.98 |

Q= 0.6 cfs
V= 0.08 ft/s

Minimum Residence time = 10 mins, therefore min swale length = 48'
**CASQA recommended min = 100'**

## POINT B

**AREA B** $Q_{85\%}$, I= 0.76

| | | | | |
|---|---|---|---|---|
| | | Area = | 4.7 | acres |
| T = | 0.0 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 2.4 min | L = | 936 feet | 0.18 Miles |
| $T_i$ = | 5.0 min | Hp= | 577 | |
| $T_c$ = | 7.4 min | Lp= | 305 | |
| | | ΔE = | 272 | |
| | | Slope = | 29.06% | |

I = 1.5 in/hr $I=(7.44*0.76(Tc^{-0.645})$

**0.2 in/hr**

Q = CIA

$Q_{WQ}$ = **0.3 cfs**

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 1 |
| Slope = | 0.020% | S = | 0.02% | d= | 1 |
| z= | 3.00 | A = | 4 | wp= | 5.5 |
| | | R = | 0.73 | a= | 4 |
| | | n = | 0.25 | R= | 0.73 |

Q= 0.3 cfs

V= 0.07 ft/s

Minimum Residence time = 10 mins, therefore min swale length =42'

**CASQA recommended min = 100'**

## AREA C1

**AREA C1** $Q_{85\%}$, I= 0.76

| | | | | |
|---|---|---|---|---|
| | | Area = | 0.8 | acres |
| T = | 0.0 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 1.4 min | L = | 400 feet | 0.08 Miles |
| $T_i$ = | 5.0 min | Hp= | 690 | |
| $T_c$ = | 6.4 min | Lp= | 605 | |
| | | ΔE = | 85 | |
| | | Slope = | 21.25% | |
| I = | 1.7 in/hr | $I=(7.44*0.76(Tc^{-0.645})$ | | |
| | 0.2 in/hr | | | |
| Q = CIA | | | | |
| $Q_{100}$ = | **0.1 cfs** | | | |

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 1 |
| Slope = | 0.02% | S = | 0.02% | d= | 1 |
| z= | 3.00 | A = | 4 | wp= | 5.5 |
| | | R = | 0.73 | a= | 4 |
| | | n = | 0.25 | R= | 0.73 |
| | | Q= | 0.3 cfs | | |
| | | V= | 0.07 ft/s | | |

Minimum Residence time = 10 mins, therefore min swale length = 42'
**CASQA recommended min = 100'**

## POINT C2

**AREA C2** $Q_{85\%}$, I= 0.76

| | | | | |
|---|---|---|---|---|
| | | Area = | 1.4 | acres |
| T = | 0.0 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 1.3 min | L = | 264 feet | 0.05 Miles |
| $T_i$ = | 5.0 min | Hp= | 350 | |
| $T_c$ = | 6.3 min | Lp= | 317 | |
| | | ΔE = | 33 | |
| | | Slope = | 12.50% | |
| I = | 1.7 in/hr | $I=(7.44*0.76(Tc^{-0.645})$ | | |
| | 0.2 in/hr | | | |
| Q = CIA | | | | |
| $Q_{100}$ = | **0.1 cfs** | | | |

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 1 |
| Slope = | 0.02% | S = | 0.02% | d= | 1 |
| z= | 3.00 | A = | 4 | wp= | 5.5 |
| | | R = | 0.73 | a= | 4 |
| | | n = | 0.25 | R= | 0.73 |
| | | Q= | 0.3 cfs | | |
| | | V= | 0.07 ft/s | | |

Minimum Residence time = 10 mins, therefore min swale length = 42'
**CASQA recommended min = 100'**

## AREA D_House

**AREA D** — $Q_{85\%}$, I= 0.76

| | | | | |
|---|---|---|---|---|
| | | Area = | 0.1 | acres |
| T = | 0.0 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 2.6 min | L = | 910 feet | 0.17 Miles |
| $T_i$ = | 5.0 min | Hp= | 793 | |
| $T_c$ = | 7.6 min | Lp= | 585 | |
| | | ΔE = | 208 | |
| | | Slope = | 22.86% | |
| I = | 1.5 in/hr | $I=(7.44*0.76(Tc^{-0.645})$ | | |
| | 0.2 in/hr | | | |
| Q = CIA | | | | |
| $Q_{100}$ = | **0.01 cfs** | | | |

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 1 |
| Slope = | 0.02% | S = | 0.02% | d= | 1 |
| z= | 3.00 | A = | 4 | wp= | 5.5 |
| | | R = | 0.73 | a= | 4 |
| | | n = | 0.25 | R= | 0.73 |
| | | Q= | 0.3 cfs | | |
| | | V= | 0.07 ft/s | | |

Minimum Residence time = 10 mins, therefore min swale length = 42'
**CASQA recommended min = 100'**

## AREA D_Aqueduct Road

**AREA D** — $Q_{85\%}$, I= 0.76

| | | | | |
|---|---|---|---|---|
| | | Area = | 1.5 | acres |
| T = | 0.1 hours | C = | 0.32 | Soil type B-(1.0 DU/A or less) |
| T = | 3.6 min | L = | 500 feet | 0.09 Miles |
| $T_i$ = | 5.0 min | Hp= | 795 | |
| $T_c$ = | 8.6 min | Lp= | 780 | |
| | | ΔE = | 15 | |
| | | Slope = | 3.00% | |
| I = | 1.4 in/hr | $I=(7.44*0.76(Tc^{-0.645})$ | | |
| | 0.2 in/hr | | | |
| Q = CIA | | | | |
| $Q_{100}$ = | **0.1 cfs** | | | |

### Vegetated Swale Capacity

Trapezoidal channel

$Q=1.49/n[A(R^{2/3})(S^{1/2})]$

| | | | | | |
|---|---|---|---|---|---|
| | | | | b= | 1 |
| Slope = | 0.02% | S = | 0.02% | d= | 1 |
| z= | 3.00 | A = | 4 | wp= | 5.5 |
| | | R = | 0.73 | a= | 4 |
| | | n = | 0.25 | R= | 0.73 |
| | | Q= | 0.3 cfs | | |
| | | V= | 0.07 ft/s | | |

Minimum Residence time = 10 mins, therefore min swale length = 42'
**CASQA recommended min = 100'**

# ATTACHMENT F

## Maintenance Plan

**(Use Chapter 5 of the SUSMP as guidance in developing your Maintenance Plan)**

FIRST CATEGORY

No Maintenance plan or funding required

| | | |
|---|---|---|
| 6 | Ongoing maintenance and compliance with inspection & reporting requirements | In perpetuity |

Applicants must propose for County determination the appropriate maintenance mechanism for selected BMPs. The BMPs should fit into one of the following categories:

### ▶ FIRST CATEGORY

The County should have only minimal concern for ongoing maintenance. The proposed BMPs inherently "take care of themselves", or property owners can naturally be expected to do so as an incident of taking care of their property

Typical BMPs:

- Biofilters (Grass swale, Grass strip, vegetated buffer)
- Infiltration BMP (basin, trench)

**Mechanisms to Assure Maintenance:**

1. Stormwater Ordinance Requirement: The WPO requires this ongoing maintenance. In the event that the mechanisms below prove ineffective, or in addition to enforcing those mechanisms, civil action, criminal action or administrative citation could also be pursued for violations of the ordinance.

2. Public Nuisance Abatement: Under the WPO failure to maintain a BMP would constitute a public nuisance, which may be abated under the Uniform Public Nuisance Abatement Procedure. This provides an enforcement mechanism additional to the above, and would allow costs of maintenance to be billed to the owner, a lien placed on the property, and the tax collection process to be used.

3. Notice to Purchasers. Section 67.813(e) of the WPO requires developers to provide clear written notification to persons acquiring land upon which a BMP is located, or others assuming a BMP maintenance obligation, of the maintenance duty.

4. Conditions in Ongoing Land Use Permits: For those applications (listed in WPO Section 67.803(c)) upon whose approval ongoing conditions may be imposed, a condition will be added which requires the owner of the land upon which the stormwater facility is located to maintain that facility in accordance with the requirements specified in the maintenance plan (Attachment F in the Major SWMP). Failure to perform maintenance may then be addressed as a violation of the permit, under the ordinance governing that permit process.

5. Subdivision Public Report: Tentative Map and Tentative Parcel Map approvals will be conditioned to require that, prior to approval of a Final or Parcel Map, the subdivider shall provide evidence to the Director of Public Works, that the subdivider has requested the California Department of Real Estate to include in the public report to be issued for the sales of lots within the subdivision, a notification regarding the maintenance requirement. (The requirement for this condition would not be applicable to subdivisions which are exempt from regulation under the Subdivided Lands Act, or for which no public report will be issued.)

**Funding:**

None Required.

### ▸ SECOND CATEGORY

The County needs to assure ongoing maintenance. The nature of the proposed BMPs indicates that it is appropriate for property owners to be given primary responsibility for maintenance, on a perpetual basis (unless a stormwater utility is eventually formed). However, the County (in a "backup" role) needs to be able to step in and perform the maintenance if property owner fails, and needs to have security to provide funding for such backup maintenance. Security for "backup" maintenance after the interim period (5 years) would not be provided, however primary owner maintenance responsibility would remain. If a stormwater utility or other permanent mechanism is put into place, it could assume either a primary or backup maintenance role.

Typical BMPs:

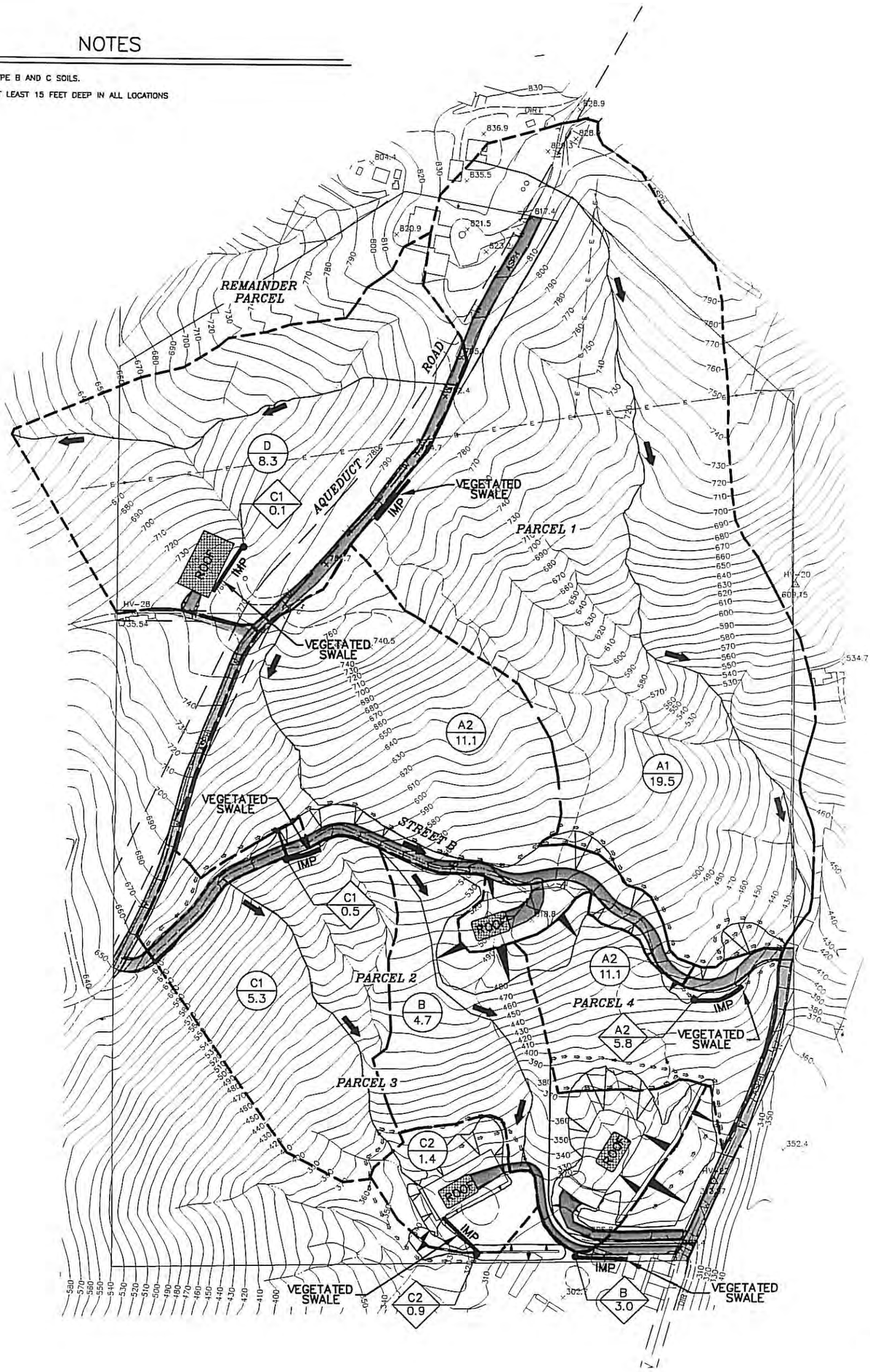
- Biofilters;
- Small Detention Basins;
- Infiltration BMP, and;
- Single Storm Drain Inserts, Oil/Water separator, Catch basin insert & screens.

**Mechanisms to Assure Maintenance**

1. Stormwater Ordinance Requirement: The WPO requires this ongoing maintenance. In the event that the mechanisms below prove ineffective, or in addition to enforcing tbose mechanisms, civil action, criminal action or administrative citation could also be pursued for violations of the ordinance.
2. Public Nuisance Abatement: Under the WPO failure to maintain a BMP would constitute a public nuisance, which may be abated under the Uniform Public

## NOTES

1. SITE CONSISTS OF TYPE B AND C SOILS.
2. GROUND WATER IS AT LEAST 15 FEET DEEP IN ALL LOCATIONS TESTED.




## LEGEND

- DRAINAGE BASIN BOUNDARY
- FLOW LINE
- PROPERTY BOUNDARY
- EXISTING/PROPOSED ROADWAY
- VEGETATED SWALE
- ROOF AREA
- ROADS/DRIVEWAYS

REGION DESIGNATION — A 45.1 — ACREAGE

POINT OF CONCENTRATION DESIGNATION — A1 70.0 — FLOW AT I=0.2 In/hr Q(cfs)

# DMA MAP & LID EXHIBIT

TPM 21159
APRIL 20, 2010

## NOTES

1. SITE CONSISTS OF TYPE B AND C SOILS.
2. GROUND WATER IS AT LEAST 15 FEET DEEP IN ALL LOCATIONS TESTED.


SCALE: 1" = 100'

## LEGEND

- DRAINAGE BASIN BOUNDARY
- FLOW LINE
- PROPERTY BOUNDARY
- EXISTING/PROPOSED ROADWAY
- VEGETATED SWALE
- ROOF AREA
- ROADS/DRIVEWAYS

REGION DESIGNATION — A 45.1 — ACREAGE

POINT OF CONCENTRATION DESIGNATION — A1 70.0 — FLOW AT I=0.2 in/hr Q(cfs)

# DMA MAP & LID EXHIBIT

TPM 21159
APRIL 20, 2010

KARN

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